

### **REMARKS**

This is a full and timely response to the outstanding Office Action mailed July 14, 2004. Upon entry of the amendments in this response, claims 2-8 and 13-32 remain pending. In particular, Applicants have amended claims 2, 6, 13-14 and 21. Claims 1 and 9-12 are canceled without prejudice, disclaimer, or waiver. Applicants reserve the right to pursue the subject matter of the canceled claims in a continuing application, if Applicants so choose, and do not intend to dedicate the canceled subject matter to the public. Reconsideration and allowance of the application and presently pending claims are respectfully requested.

#### **A. Claim objection**

With reference to claim 21, the Office action states that “*Claim 21 is objected to because of the following informalities: in line 3, “said gas” lacks antecedence and should read - - a gas - -. Appropriate correction is required.*”

##### **Response to Objection**

With reference to this Office Action objection, Applicants have corrected claim 21 to provide appropriate antecedence basis for “said gas.”

In light of the above-mentioned amendment, Applicants respectfully assert that the Office Action objection to claim 21 is no longer valid, and request withdrawal of the objection.

#### **B. Rejections of claims under 35 U.S.C. §102**

##### **a) Statement of the rejection**

The Office Action states: “*Claims 1, 9-12, 15, 16, 19, 21-24, 27-29, 31 and 32 are rejected under 35 U.S.C. 102(e), as being anticipated by Beyne et al. (US Patent 6,362,484 B1).*”

##### **b) Response to the rejection**

A proper rejection of a claim under 35 U.S.C. §102 requires that a single prior art reference disclose each element of the claim. Accordingly, the single prior art reference must properly disclose, teach or suggest each element of the claimed invention. Provided below are the responses to each of the rejections under 35 U.S.C. §102(e), relating to claims 1, 9-12, 15, 16, 19, 21-24, 27-29, 31 and 32.

### **Claims 1, 9-12**

Claims 1, 9-12 have been canceled without prejudice, waiver or disclaimer. These claims have been canceled merely to reduce the number of disputed issues and to facilitate early allowance and issuance of other claims in the present application. Because claims 1, 9-12 have been canceled, the rejection of these claims has been rendered moot.

### **Claim 15**

In rejecting Applicants' method claim 15, the Office Action states:

*With respect to claim 15, Beyne teaches a method for imaging with the use of x-rays, the method comprising: providing a volume of gas; defining a first region of the gas and a second region of the gas, the first region of the gas being different than the second region of the gas; generating a first signal indicative of an intensity of a first portion of x-rays radiating into the first region of the gas, the first signal corresponding to at least a first pixel (18); and generating a second signal indicative of an intensity of a second portion of x-rays concurrently radiating into the second region of the gas, the second signal corresponding to at least a second pixel (any other pixel (18) in a detector array) wherein the first portion of x-rays is different than the second portion of x-rays (see abstract; lines 36-56; Figs. 3 and 4).*

Applicants respectfully assert that Beyne does not disclose at least, Applicants' method of "defining a first region of the gas and a second region of the gas, the first region of the gas being different than the second region of the gas." Though the Office action points to Beyne's abstract; column 4; lines 36-56; Figs. 3 and 4, Applicants respectfully submit that neither the Abstract nor the referred text disclose any "regions of gas." Furthermore, Beyne's figures also do not show any regions of gas, as is evidenced by the lack of reference numerals indicating such regions.

It is unfortunate that the Office action does not point out where exactly in the referred text or elsewhere in Beyne, can be found the above-mentioned regions of gas, let alone a method of defining such regions. On the other hand, Applicants have disclosed this aspect, in detail, in their specification (for example, in line 1, page 17, which states, "the first region may be defined by a first chamber") and in their various figures (e.g. Figs. 6 and 8).

Consequently, Applicants respectfully assert that the single prior art reference (Beyne) does not properly disclose, teach or suggest each element of the claimed invention, as is required for a proper rejection of claim 15 under 35 U.S.C. §102(e). Applicants therefore request withdrawal of the Office Action rejection of claim 15, followed by allowance.

### **Claims 16 and 19**

Applicants respectfully assert that claim 15 is allowable. Because independent claim 15 is allowable, claims 16 and 19 that depend directly on claim 15 are also allowable as a matter of law. *In re Fine*, 837 F. 2d 1071 (Fed. Cir. 1988). Consequently, Applicants respectfully request that rejection of claims 16 and 19 under 35 U.S.C. 103(a) be withdrawn, and that these claims be placed in allowance.

### **Claim 21**

In rejecting Applicants' system claim 21, the Office Action states:

*With respect to claim 21, Beyne teaches an imaging system (Figs. 3 and 4) comprising: a gas detector (1) comprising imaging volumes arranged in an array (see abstract), a gas (a gap (20) is filled with an ionization gas) being susceptible to ionization; (column 4; lines 36-57) an ionization detector (60) for providing indications of ionization of the gas for at least some of the imaging volumes (Fig. 6; column 11; lines 1-17); and an image generator for converting said indications into an image (column 12; lines 62-66).*

Applicants respectfully assert that Beyne does not disclose at least, Applicants' "**imaging volumes**." Though the Office action points to Beyne's "abstract" as showing anticipatory elements relating to Applicants' "imaging volumes arranged in an array;" and to "Fig.6; column 11; lines 1-17" as showing anticipatory elements relating to Applicants' "imaging volumes," it is unfortunate that the Office action does not point out where exactly in the referred text or elsewhere in Beyne, can be found the above-mentioned imaging volumes. Applicants submit that neither the abstract nor the referred text disclose any "imaging volumes." Beyne's Fig. 6 does not show any imaging volumes either, as is evidenced by the lack of reference numerals indicating such volumes.

It must be pointed out that unlike Beyne, which makes no mention of such imaging volumes, Applicants have explained this aspect in detail in their specification and in their various figures (e.g. Figs. 6 and 8).

Consequently, Applicants respectfully assert that the single prior art reference (Beyne) does not properly disclose, teach or suggest each element of the claimed invention, as is required for a proper rejection of claim 21 under 35 U.S.C. §102(e). Applicants respectfully request withdrawal of the Office Action rejection of claim 21, and request allowance of the claim.

**Claims 22-24**

Applicants respectfully assert that because claim 21 is allowable, claims 22-24 that depend directly on claim 21 are also allowable as a matter of law. *In re Fine*, 837 F. 2d 1071 (Fed. Cir. 1988). Consequently, Applicants respectfully request that rejection of claims 22-24 under 35 U.S.C. 102(e) be withdrawn, and that these claims be placed in allowance.

**Claim 27**

In rejecting Applicants' method claim 27, the Office Action states:

*With respect to claim 27, Beyne teaches an imaging method comprising: providing a gas detector comprising an array of gas volumes; detecting ionization at respective gas volumes in the array of gas volumes; and converting the ionization detected into an image (Fig. 3; column 4; lines 36-60).*

Applicants respectfully assert that Beyne does not disclose at least, Applicants' method of "providing a gas detector comprising an array of gas volumes." It is unfortunate that the Office action does not point out where exactly in the referred text or elsewhere in Beyne, can be found the above-mentioned array of gas volumes. In the rejection reproduced above, the Office action points to Beyne's "Fig.3; column 4; lines 36-60" as showing anticipatory elements relating to Applicants' "array of gas volumes," let alone a method of providing a gas detector having such an array. Applicants submit that the referred text does not disclose an "array of gas volumes." Beyne's Fig. 3 does not show any array of gas volumes either, as is evidenced by the lack of reference numerals indicating such an array.

It must be pointed out that unlike Beyne, which makes no mention of such an array, Applicants have explained this aspect in detail in their specification and in their various figures (e.g. Figs. 6 and 8).

Consequently, Applicants respectfully assert that the single prior art reference (Beyne) does not properly disclose, teach or suggest each element of the claimed invention, as is required for a proper rejection of claim 27 under 35 U.S.C. §102(e). Applicants respectfully request withdrawal of the Office Action rejection of claim 27, and request allowance of the claim.

**Claims 28 - 29, 31, and 32**

Applicants respectfully assert that because claim 27 is allowable, claims 28 - 29, 31, and 32 that depend directly or indirectly on claim 27 are also allowable as a matter of law. *In re Fine*, 837 F. 2d 1071 (Fed. Cir. 1988). Consequently, Applicants respectfully request that

rejection of claims 28 - 29, 31, and 32 under 35 U.S.C. 102(e) be withdrawn, and that these claims be placed in allowance.

**C. Rejections under 35 U.S.C. §103(a)**

**a) Statement of the rejection**

Claims 2-4, 6-8, 17, 25, and 26 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Beyne et al. (US Patent 6,362,484 B1) in view of Pullan (US Patent 5,099,129).

**b) Response to the rejection**

**Claims 2-4, 6, 7, 25, and 26**

Attention is drawn to MPEP 706.2(j) *Contents of a 35 U.S.C. 103 Rejection*, which states in pertinent part:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). See MPEP § 2143 - § 2143.03 for decisions pertinent to each of these criteria. (Emphasis added)

With reference to the first of the above-mentioned three criteria, it is unfortunate that the Office Action fails to point out some suggestion or motivation, either in the cited references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify or to combine the reference teachings. The Office action states that “Beyne teaches a substrate but is silent about the imaging system, wherein the imaging volumes are defined by chambers...” and then goes on to allege that “It would have been obvious to one of ordinary skill in the art at the time invention was made to employ the teachings of Pullan with the X-ray detector of Beyne in order to improve the detection gain of the gas detector allowing produce (sic) enhanced X-ray images corresponding to the object of interest.” (Emphasis added).

Unfortunately, the Office action fails to point out where in Beyne is present, a suggestion or motivation “to improve the detection gain of a gas detector,” so as to motivate one of ordinary skill in the art to modify or combine Beyne with Pullan. Conversely, the Office

action fails to point out where such a motivation can be found in Pullan, leading to the prior-art combination of Pullan and Beyne.

Turning to the third of the above-mentioned three criteria, (i.e. the prior art references must teach or suggest all the claim limitations), Applicants draw attention to Pullan's specification, specifically to his "Background of the invention," wherein Pullan discloses certain shortcomings in a prior art "detecting head." In this connection, Pullan states in his col. 1, lines 31-35, that, "The detecting electrode sub-assemblies (crossing points) can thereby be scanned across a sample. In a preferred arrangement, respective 'x' and 'y' coordinate stepper motors are used to provide a raster scan of a plurality of regions or frames in the sample zone" (Emphasis added).

Pullan then goes on to teach away from such an apparatus, by asserting in his col. 1, lines 43-56, "The apparatus described in EP-A-112645 is particularly useful in providing a high resolution "picture" of the spatial distribution of radioactivity in a radiogram and it was primarily developed for visualizing the distribution of radioactivity in a sample. There is, however, a need for an efficient, multiple sample, radioactivity detector of relatively straightforward and robust construction which can be used, for example, in the field of medical diagnostics and biomedical research, to count beta particle emissions from radioactive materials taken from radiograms or in biological or other samples where only the radioactivity of the samples is required and not the distribution of radioactivity within a sample. The present invention seeks to solve this problem." (Emphasis added).

Unlike Pullan, Applicants do not imply in their disclosure, any limitation such as the above-mentioned "only the radioactivity of the samples is required and not the distribution of radioactivity within a sample." To the contrary, Applicants disclose in one exemplary embodiment (page 11, lines 5-13), the capture of "dynamic x-ray images" incorporating various frames per second of movement (e.g. 80 fps and 60 fps).

Consequently, Applicants respectfully assert that the Office action fails to meet the third criteria wherein the prior art references must teach or suggest all the claim limitations, because Pullan teaches away from certain embodiments of the Applicants' disclosure.

In addition to the arguments presented above in connection with MPEP 706.2(j), Applicants respectfully assert that it is improper to carry out a rejection under 35 U.S.C. 103(a) by using hindsight based on Applicants' disclosure rather than showing in the cited prior art, a teaching or suggestion to make the claimed combination. The impropriety of using such

hindsight has been well established in patent practice, and in the interests of brevity, will not be elaborated here any further.

Therefore, for the above-mentioned reasons, Applicants respectfully submit that the Office action has failed to establish a *prima facie* case of obviousness as is required for a proper rejection of claims 2-4, 6, 7, 25, and 26 under 35 U.S.C. 103(a). Applicants request withdrawal of the rejection, followed by allowance of claims 2-4, 6, 7, 25, and 26.

**Claim 8**

For reasons similar to those set forth above with respect to the rejection of claims 2-4, 6, 7, 25, and 26 under 35 U.S.C. 103(a), Applicants respectfully assert that the Office action fails to establish a *prima facie* case of obviousness. Specifically, the Office action fails to show where in the cited prior art can be found a suggestion or motivation to modify the references so as to "increase resolution of the gas detector." Nor is there shown where in the prior art can be found a teaching or suggestion of all of Applicants' claim limitations. To the contrary, as pointed out above (with reference to claims 2-4, 6, 7, 25, and 26), Pullan teaches away from certain aspects of Applicants' disclosure.

Therefore, Applicants respectfully submit that the rejection of claim 8 under 35 U.S.C. 103(a) is improper as the Office action fails to establish a *prima facie* case of obviousness. Applicants request withdrawal of the rejection, followed by allowance of claim 8.

**D. Rejections under 35 U.S.C. §103(a)**

**a) Statement of the rejection**

Claims 5, 13, 14 and 18 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Beyne et al. (US Patent 6,362,484 B1) in view of McDaniel et al. (US Patent 4,780,897).

**b) Response to the rejection**

**Claims 5, 13, 14, and 18**

The Office action states:

*With respect to claim 5, 13, 14 and 18, (Beyne?) teaches claimed except for a first and second gas reservoirs communicating with the chamber. McDaniel teaches an X-ray detector using two different gases (ion sources) at different pressures. Gasses (e.g. Krypton and Xenon) and pressures could optimally be selected to pass higher energy X-rays an/or to allow interact with lower energy X-rays for producing desirable X-ray image (column 12; lines 15-25). It would have been obvious to one ordinary skill in art at the time invention was made to provide the X-ray imaging system of Francke (Francke or Beyne?) with teachings of McDaniel, in order to potentially change*

*operating characteristics of the gas detector so that improved signal corresponding to the detected X-rays can be produced. (Emphasized text added)*

Referring to the emphasized portions in the above-mentioned statement, Applicants find this rejection confusing and indeterminate. Presumably, the Office action is basing the rejection on the combination of Beyne and McDaniel rather than Francke and McDaniel.

Notwithstanding the ambiguity of the rejection, Applicants respectfully assert that because independent claims 2 and 15 are allowable, claims 5, 13, 14, and 18 that depend directly or indirectly on either claim 2 or claim 15, are also allowable as a matter of law. *In re Fine*, 837 F. 2d 1071 (Fed. Cir. 1988).

Consequently, Applicants respectfully request that rejection of claims 5, 13, 14, and 18 under 35 U.S.C. 103(a) be withdrawn, and that these claims be placed in allowance.

**E. Rejections under 35 U.S.C. §103(a)**

**a) Statement of the rejection**

Claims 20 and 30 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Beyne et al. (US Patent 6,362,484 B1) in view of Little et al. (US Patent 5,119,408).

**b) Response to the rejection**

**Claims 20 and 30**

The Office action states that “Beyne teaches claimed invention except for moving the object relative to the volume of the gas while the object is being irradiated,” and further adds that “It would have been obvious to one of ordinary skill in the art at the time invention was made to employ the teachings of Little with the X-ray detector of Beyne in order to provide dynamic X-ray images corresponding to the object of interest.”

Applicants respectfully submit that the rejection of claims 20 and 30 under 35 U.S.C. 103(a) is improper as the Office action fails to establish a *prima facie* case of obviousness. Specifically, the Office action fails to show where in Beyne can be found **a suggestion or motivation** “for moving the object relative to the volume of the gas... in order to provide dynamic X-ray images corresponding to the object of interest.”

Furthermore, Applicants respectfully assert that because independent claims 15 and 27 are allowable, claims 20 and 30 that depend directly or indirectly on either claim 15 or claim 27, are also allowable as a matter of law. *In re Fine*, 837 F. 2d 1071 (Fed. Cir. 1988).

Consequently, Applicants respectfully request that rejection of claims 20 and 30 under 35 U.S.C. 103(a) be withdrawn, and that these claims be placed in allowance.



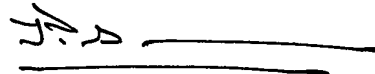
**Prior Art Made of Record**

The prior art made of record has been considered, but is not believed to affect the patentability of the presently pending claims.

**CONCLUSION**

In light of the foregoing amendments and for at least the reasons set forth above, Applicant respectfully submits that all objections and/or rejections have been traversed, rendered moot, and/or accommodated, and that the now pending claims 2-8 and 13-32 are in condition for allowance. Favorable reconsideration and allowance of the present application and all pending claims are hereby courteously requested. If, in the opinion of the Examiner, a telephonic conference would expedite the examination of this matter, the Examiner is invited to call the undersigned representative at (770) 933-9500.

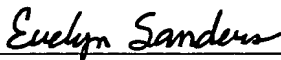
Respectfully submitted,



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